

Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, D.C. 20554

ORIGINAL

In the Matter of

Establishment of Rules and Policies for the  
Digital Audio Radio Satellite Service in the  
2310-2360 MHz Frequency Band

) IB Docket No. 95-91  
) GEN Docket No. 90-357  
) RM No. 8610  
) PP-24  
) ~~PP-87~~  
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FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF THE SECRETARY

REPLY COMMENTS OF  
AMERICAN MOBILE RADIO CORPORATION

American Mobile Radio Corporation ("AMRC"), by its attorneys, hereby submits its reply comments on the Further Notice of Proposed Rule Making in the above-referenced matter ("*Further Notice*").<sup>1/</sup> AMRC continues to urge the Commission to finalize rules now to permit the flexible use of terrestrial repeaters to fill coverage gaps in a satellite-based Digital Audio Radio Service ("DARS") system. AMRC, as one of the two winning bidders in the satellite DARS auction, is proceeding as quickly as possible to finalize its business plan and system design, and to begin construction of its satellites. Those plans are based on the Commission's DARS orders and the Commission's proposal to permit the use of terrestrial repeaters. As such, it is critical that the Commission finalize its rules as soon as possible.

The use of terrestrial repeaters will be an important component of AMRC's satellite DARS system. To provide a high quality national radio service in AMRC's allocated frequencies, AMRC must use terrestrial repeaters to improve the effective coverage of its system. These "gap-fillers" will be necessary both in those limited areas where it may be difficult to

<sup>1/</sup> *Report and Order Memorandum Opinion and Order and Further Notice of Proposed Rulemaking*, FCC 97-70 (March 3, 1997), paras. 138-142 and Appendix C. AMRC filed comments in response to the *Further Notice* earlier this month. Comments of American Mobile Radio Corporation ("AMRC Comments"), dated June 13, 1997.

receive satellite-based signals due to line-of-sight blockage from foliage and buildings and where the satellite signal receives interference from various terrestrial sources, such as microwave ovens. In particular, the use of repeaters will be vital to service in mobile environments where, without such facilities, users would be subjected to an annoying loss of service while they are listening, as the signal level changes. In a digital environment, the loss of an adequate signal can be particularly bothersome, since it can produce a total loss of audio. Through the use of terrestrial repeaters, AMRC will be able to compensate for blockage of or interference to the satellite signal and provide greater effective coverage.

The comments filed by terrestrial broadcasters and their representatives, which have opposed DARS altogether, seek either to delay a Commission decision on the rules for repeaters, or to further restrict the use of repeaters. The Commission should reject these arguments, however, since the commenters fail to demonstrate any need for, or public interest benefit from, such delay or further restrictions.

**I. The Commission Should Proceed Expeditiously to Promulgate Rules for Repeaters That Eliminate Uncertainty for the Licensees**

The National Association of Broadcasters ("NAB") and the Alabama Broadcasters Association ("ABA") argue that the DARS licensees have not provided sufficient technical information on their prospective terrestrial repeaters, and that, as a result, this proceeding should be postponed until additional information is made available. NAB Comments at 2-5; ABA Comments at 2-4. NAB in particular asks that satellite DARS licensees be required to provide additional technical information regarding effective radiated power, expected antenna gain and pattern, repeater interference characteristics both with the satellites and other repeaters, required spacing between repeaters and other installation requirements, impact on receiver performance of

co-incident illumination by both satellite and repeater signals, and specific technical criteria used to establish the need for repeaters at any given location. NAB Comments at 4-5.

These arguments, however, fail completely to explain why it is necessary or useful for the DARS licensees to provide such information to the Commission. AMRC's amendment provides the Commission with all the information required by the Commission's rules. AMRC has explained in its comments that its repeaters will operate from the same kinds of towers and tower heights as broadcast transmitters and at a lower power. AMRC Comments at 3. AMRC is committed to complying with requirements that it not cause interference to users of adjacent bands, and to coordinating with users of the same frequencies in Canada and Mexico. Thus, there is no apparent purpose to be served by further delaying the promulgation of repeater rules.

NAB also argues that, following adoption of rules on terrestrial repeaters, the Commission should impose a waiting period on the use of these repeaters in order to determine if signal reception problems could be resolved through other means. NAB Comments at 6-7. In AMRC's view, however, once the rules for the licensing and operation of terrestrial repeaters are established, there can be no legitimate rationale for delaying the certification or licensing of these repeaters. Rather, the Commission should permit the DARS licensees to meet their regulatory obligations and move forward with their business plans, including the deployment of any necessary repeaters, on an expeditious basis. Any delay in the licensing of terrestrial repeaters will slow the introduction of AMRC's service, to the detriment of American consumers. The speed of repeater deployment should be determined not by the speed of an application process, but by market forces.

## **II. The Commission Should Use a Blanket Certification Process for As Many Terrestrial Repeaters As Market Forces Dictate**

In its own comments, AMRC urges the Commission to permit DARS licensees to operate terrestrial repeaters by certifying that any repeaters they operate will comply with the Commission's rules. In isolated cases in which certification may not be possible, the licensees would be required to submit a specific request to the Commission with a showing that a grant of a license for that particular facility would be in the public interest.

NAB, ABA, and Susquehanna Radio Corp. ("Susquehanna") argue that the Commission should require that each terrestrial repeater be individually licensed. NAB's self-serving argument is that individual licensing is necessary to verify compliance with the prohibition on local program origination, and monitor and prevent potential interference. NAB Comments at 6. Susquehanna contends that blanket licensing would lead to the uncontrolled proliferation of thousands of terrestrial repeaters. Susquehanna Comments at 3.

AMRC disagrees strongly with the proposals for individual licensing of repeaters. Individual licensing would add extraordinary expense and potential delay to the deployment of repeaters. At the same time, it is not at all apparent how such individual licensing will add at all to the Commission's ability to enforce its prohibition on local program origination or to protect against interference. If a repeater is being misused, anyone will be able to file a complaint against the DARS licensee and that licensee will be held accountable. Susquehanna has a misplaced fear that, under a blanket license system, repeaters will be "sold to the general public" and operated irresponsibly by unaccountable parties. To the contrary, AMRC proposes that each DARS licensee be responsible for all of its repeaters.

There is substantial precedent for implementation of a blanket licensing procedure for DARS terrestrial repeaters. In several other services, the Commission has adopted blanket licensing for boosters or additional transmitters similarly designed to fill in gaps in signal coverage. As long ago as 1983, the Commission determined that Part 22 Public Mobile Radio Service providers could deploy additional "fill-in" transmitters without prior Commission authorization as long as their authorized service areas were not expanded in any direction and the Commission was notified of this deployment.<sup>2/</sup> Since that time, the Commission has eliminated even this notification requirement.<sup>3/</sup> In 1991, the Commission ruled that cellular service providers could deploy signal boosters called "cellular repeaters" without prior authorization, subject to similar requirements. The Commission described these repeaters as a cost effective means of filling in areas of poor coverage within a cell site.<sup>4/</sup> Last year, the Commission significantly expanded the use of such signal boosters, allowing the unauthorized deployment of these devices by providers of Part 22 paging services, Part 90 land mobile and paging services, and Part 94 multiple address system services.<sup>5/</sup> According to the Commission, this regulatory framework would allow licensees to fill in weak or no-signal areas at less cost and without imposing an additional licensing burden on either the licensee or the Commission.<sup>6/</sup> Finally, the

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<sup>2/</sup> *Public Mobile Radio Services Rules*, 95 FCC 2d 769, 812-13 (1983). See also *Public Mobile Services, Notice of Proposed Rule Making*, 47 Fed. Reg. 4382 (1982).

<sup>3/</sup> *Public Mobile Services*, 9 FCC Rcd 6513, 6519 (1994).

<sup>4/</sup> *Use of Cell Enhancers in the Domestic Public Radio Service*, 7 FCC Rcd 23, 24 (1991). See also 47 C.F.R. § 22.165.

<sup>5/</sup> *Routine Use of Signal Boosters*, 11 FCC Rcd 16621 (1996).

<sup>6/</sup> 11 FCC Rcd at 16622.

Commission has proposed to eliminate individual licensing even for FM booster and translator stations.<sup>7/</sup>

The Commission should also reject NAB's call for a "cap" on the number of terrestrial repeaters. NAB Comments at 6. The DARS licensees should be permitted to deploy as many terrestrial repeaters as warranted by market forces. Assuming the Commission imposes no artificial limit, AMRC's use of repeaters will be a natural function of economics -- the deployment of repeaters is simply too expensive for such a cap to have any useful purpose.

### **III. No Further Rules Are Needed to Enforce a Prohibition on the Origination of Local Programming from Terrestrial Repeater**

Susquehanna argues that the Commission should require that terrestrial repeaters be designed and installed "in a manner that will allow [the licensee] to rebroadcast only the signal received from the satellite." Susquehanna Comments at 4.

AMRC does not contest the Commission's proposed prohibition on the origination of local programming from terrestrial repeaters. AMRC Comments at 1. The technical requirements proposed by Susquehanna are unnecessary, however, and might add to the cost of constructing and deploying terrestrial repeaters.<sup>8/</sup> As such, the Commission does not need to adopt this or any other further rules in order to enforce its prohibition on local program origination.

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<sup>7/</sup> See *Improving Commission Processes, Notice of Inquiry*, 11 FCC Rcd 14006, 14021-22 (1996).

<sup>8/</sup> NAB argues that the Commission's rules must state that repeaters "are to receive their input signals solely from the DARS satellite." NAB Comments at 5. This provision would be redundant and unnecessary, but, unlike Susquehanna's proposal, it does not appear to add to DARS licensees' construction and deployment costs.

#### **IV. AMRC Spectrum Usage is Highly Efficient and Consistent with Commission Policy**

Susquehanna challenges AMRC's decision to use 2.5 MHz of its total 12.5 MHz DARS allotment for the exclusive operation of its terrestrial repeaters. Susquehanna argues that this system design is contrary to the Commission's position that a satellite DARS licensee requires 12.5 MHz of bandwidth in order to implement an economically viable system. Susquehanna Comments at 5.

AMRC's frequency plan and modulation scheme is justified by both its efficiency and its consistency with prior development efforts. There are basically two ways to use the spectrum in a mixed satellite/terrestrial environment. One way, selected by AMRC, is to use separate frequencies for the satellite and terrestrial portions, thereby avoiding the interference conflict between the two. The second way is to operate on the same frequencies and use some form of spectrum spreading to separate the signals in the receiver. The first method explicitly allocates some of the spectrum to the terrestrial component. The second method allocates some of the spectrum to the terrestrial component more implicitly, by requiring additional spectrum spreading. Both methods use the entire 12.5 MHz and provide equivalent spectrum efficiency. In addition, as a result of its system design, AMRC can operate its satellite transponders at saturation, maximizing its downlink margin. Thus, AMRC is convinced that, overall, its proposed design will be able to deliver by satellite at least as many channels as other possible alternatives.

In addition, AMRC's system design permits it to take advantage of the years of ongoing research and development effort by WorldSpace, Inc.<sup>2/</sup> If AMRC's design were based on a

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<sup>2/</sup> WorldSpace, Inc. holds a twenty percent (20%) interest in AMRC.

modulation scheme that permits transmission by the satellites and the repeaters on the same frequencies, AMRC would have to redesign key satellite and receiver elements, adding millions of dollars to the cost of its DARS system, resulting in higher prices for radios for U.S. consumers, and delaying the system's deployment. In the receiver, AMRC would have to completely redesign the chip responsible for the demodulation and decoding of satellite transmissions. AMRC also would have to redesign its on-board signal processors.

Moreover, AMRC's system design is entirely consistent with the Commission's satellite DARS spectrum allocation. The Commission allotted 12.5 MHz to each satellite DARS system and did so with the understanding that some of the spectrum assigned to the licensee would be used for terrestrial repeaters. Thus, as long as AMRC can demonstrate that it is able to provide a robust satellite signal and will comply with the prohibition on use of terrestrial repeaters to originate programming, its choice of modulation scheme and its frequency plan should be irrelevant. The fundamental nature of AMRC's system as a satellite DARS system is unchanged.

#### **V. The Commission Should Reject CEMA's Qualitative Performance Standard**

AMRC agrees with the Consumer Electronics Manufacturers Association ("CEMA") that it is critically important that consumers should be able to rely on the new service for consistent, high-quality reception, and that terrestrial repeaters will play an important role in providing that reliability. At the same time, however, AMRC continues to disagree with CEMA's argument that the Commission should impose extensive qualitative performance requirements on DARS licensees in order to meet that level of reliability.<sup>10/</sup> As AMRC made clear in its opposition to

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<sup>10/</sup> CEMA Comments at 8-9. See also CEMA Petition for Reconsideration, dated March 27, 1997. CEMA's argument in these comments appears inapposite to the Commission's *Further Notice*. CEMA does not propose here a regulatory policy for the licensing and  
(continued...)



CEMA's Petition for Reconsideration, CEMA's proposed requirement is inappropriate and unnecessary.<sup>11/</sup>

In addition, the CRC study relied on by CEMA evaluates a system that uses on-channel frequencies, a technical feature that is not part of AMRC's proposed system. Therefore, the analysis and conclusions of the CRC study cannot be applied to AMRC's satellite DARS system.

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<sup>10/</sup> (...continued)  
operation of terrestrial repeaters. Instead, it argues for the adoption of an unrelated policy that, in effect, will require the extensive use of repeaters. As a result, the Commission should ignore CEMA's comments. Nonetheless, AMRC does briefly address the merits of CEMA's argument.

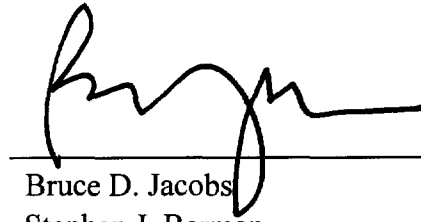
<sup>11/</sup> Opposition to Petitions to Reconsideration, American Mobile Radio Corporation, dated May 12, 1997, at 4-5.

**Conclusion**

Therefore, based on the foregoing, AMRC urges the Commission to expeditiously finalize its rules to permit the use of terrestrial repeaters as required by market forces, and to proceed promptly with the process of blanket certification for these repeaters, thereby allowing the DARS licensees to move forward with their business plans.

Respectfully submitted,

**AMERICAN MOBILE RADIO CORP.**

A handwritten signature in black ink, appearing to read "Bruce D. Jacobs", is written over a horizontal line. The signature is stylized with a large initial "B" and a long horizontal stroke extending to the right.

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Date: June 27, 1997

**TECHNICAL CERTIFICATE**

I, William B. Garner, Chief Scientist of American Mobile Satellite Corporation, hereby certify that I have reviewed the technical aspects of the foregoing Reply Comments of American Mobile Radio Corporation, and that it is complete and accurate to the best of my knowledge and belief.

By: William B. Garner  
William B. Garner  
Chief Scientist  
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Dated June 27, 1997

## **CERTIFICATE OF SERVICE**

I, Cynthia Smith Rush, a secretary to the law firm of Fisher Wayland Cooper Leader & Zaragoza L.L.P., hereby certify that on this 27th day of June, 1997, I served a true copy of the foregoing "Reply Comments of AMRC" by first class United States Mail, postage prepaid, upon the following:

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